

STP Quarterly Review

08 Feb 2010

1QFY10

**Dr. William F. Denig, Chief
Solar & Terrestrial Physics Division**

NOAA/NESDIS/NGDC

303 497-6323

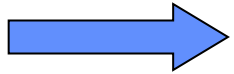
William.Denig@noaa.gov





OUTLINE

Solar & Terrestrial Physics Division



STP Program Overview

Milestones & Performance Measures

Awards & Personal Achievements

Accomplishments

Special Interest Items

Issues & Summary



Solar & Terrestrial Physics Division Personnel



Solar & Terrestrial Physics Division

William Denig/F, Chief

Janet Brown/F, Secretary

Karen Horan/F, Physical Science Tech

Craig Clark/F, Scientific Data Tech

Earth Observation Group (EOG)

Chris Elvidge/F, Team Lead

- Kim Baugh/C
- Ben Tuttle/C
- Tilottama Ghosh/C
- Daniel Ziskin/C

Key

F – Federal

C – CIRES/CIRA

S – Student

G – Guest Scientist

Space Environment Group (SEG)

Eric Kihn/F, Team Lead

- Terry Bullett/C
- Ray Conkright/C
- Ed Erwin/F
- Rob Redmon/F
- Herb Sauer/G
- Dan Wilkinson/F
- Kelly Prendergast/F
- Jim Manley/C
- Pat Purcell/C
- Peter Elespuru/C
- Anu Sunaravel/S
- Janet Machol/C @ SWPC
- John Schminky/S
- Preeti Bhaneja/C

Earth Geophysics Group (EGG)

Vacant/F, Team Lead

- Patrick Alken/C
- Rob Prentice/C
- Fran Coloma/C
- Justin Mabie/C
- Don Herzog/G
- Andrea Bilich/F, NGS
- Dan Winester/F, NGS
- Tim Wilkins/F, NGS



STP Division Overview

Personnel Changes



- **Gains**
 - Preeti Bhaneja – Post-doc (Ionospheric Data Services) – Terry Bullett
- **Losses**
 - David Schmerge – Return to Table Mountain
- **Vacancies**
 - STP Real-time Data Manager – On hold
 - EOG Data Manager – On hold
 - SEM-N Deputy Program Manager/Systems Engineer – CIRA
- **Inbound**
 - None
- **Outbound**
 - Andria Bilich – NGS; Move downstairs
 - Tim Wilkins – NGS; Move downstairs
 - Dan Winester – NGS; Move downstairs



STP Division Overview

Gains – Dr. Preeti Bhaneja



Dr. Preeti Bhaneja has joined the Ionospheric Data Services group as a CIRES post-doc with Terry Bullett. Preeti earned her PhD at the University of Texas at Dallas under Prof Greg Earle. Her thesis title was, “Rocket and Ionosonde Studies of Midlatitude Spread F”. Preeti will be presenting the results from her thesis in an upcoming seminar.

Dr. Bhaneja’s post-doc work at NGDC involves developing quality metrics for MIRRION.



Courage is not always a thunderous and a roaring voice. It is a quiet voice, which at the end of the day says, “I will try again tomorrow”.

-Unknown

Real Courage is when you know you are licked before you begin, but you begin anyway.

-Lee Harper





STP Division Overview

External Funding – FY10



<u>Program</u>	<u>Group</u>	<u>Amount</u>	<u>Status</u>
• Climate Data Modernization Program (EOG)	EOG	75K	Received
• National Air & Space Information Center	EOG	100K	Confirmed
• Coral Reefs	EOG	45K	Received
• World Bank	EOG	92K	Confirmed
• Department of Energy	EOG	50K	Unconfirmed
• MAFFIN	EOG	18K	Planned
• NFRDI	EOG	8K	Received
• CIA	EOG	50K	Unconfirmed
• CLASS	SEG	240K	Confirmed
• NPOESS SEM-N Algorithm Development	SEG	266K	Received
• NPOESS Advisory	SEG	80K	Planned
• ViRBO	SEG	50K	Planned
• NVDS	SEG	90K	Planned
• Hybrid Cloud Computing	SEG	65K	Proposed
• GOES-R	SEG	120K	Confirmed
• Climate Data Modernization Program	SEG	24K	Confirmed
• CORS-West Operations	EGG	286K	Confirmed
• Climate Data Modernization Program	EGG	6K	Approved
• NOAA Preserve America Initiative	EGG	12K	Proposed
		<hr/> \$1,662K	



STP Division Overview

Agreements – Status



STATUS

Scope	Team	Type	Partner	NOAA Legal	DOC Legal	NGDC Signed	Partner Signed	Start	End	Status	
CORS Support	EGG	AGR	NGS	n/a	n/a	X		01-Oct-03	30-Sep-09	G	At NGS for final signature
SWx Climatology	SEG	MOU	AFCCC	X	X	X	X	27-May-04	01-Oct-14	G	In place - nothing to report
GPS Data (CORS)	EGG	MOA	Multi	n/a	n/a			20-Sep-04	n/a	Y	FYI - Renewal in process
NASIC	EOG	MOU	NASIC	X	X	X	X	09-Mar-06	01-Jan-11	G	In place - nothing to report
Ionospheric Data	SEG	MOU	AFWA	X	X	X	X	21-Aug-06	21-Aug-11	G	In place - nothing to report
DMSP Archive	SEG	MOA	DMSP					TBD	TBD	Y	Expired - Renewal in process
Ionosonde Sites	SEG	MOU	USGS	X	X	X	X	06-Apr-09	05-Apr-14	G	In place - nothing to report
SEM-N - AFRL	SEG	MOA	AFRL	X	X	X	X	11-May-09	11-May-14	G	In place - nothing to report
Nighttime Lights	EOG	MOU	DOE	X	X	X	X	09-Sep-09	30-Sep-13	G	In place - nothing to report
Gas Flaring	EOG	MOU	WBank	X				TBD	30-Dec-14	Y	At DOC/OGC

As of: 08 Feb 10



STP Division Overview

CDMP – Status



STATUS

Dataset	Funded in FY09	Proposed for FY10	POC	Contractor (\$K) - FY10	Contractor (\$K) - Expended YTD	NGDC - FY10 (\$K)
DMSP film scanning (L3)	√	√	Elvidge	425.0	0.0	42.5
Historical ionosonde records (L7)	√	√	Redmon	90.0	0.0	9.0
Historical solar spectral data (L16)	√	–	Morrill (NRL)	–	–	–
Historical solar observations (L18)	√	√	Horan	30.0	0.0	3.0
Cosmic rays - Forbush archives (L42)	√	√	Denig	80.0	0.0	8.0
Heat capacity mapping mission (L44)	√	√	Elvidge	50.0	0.0	5.0
NGS Multi-Lens (L50)	√	√	Elvidge	275.0	0.0	27.5
Ionosonde Paper Record Project (L55)	–	√	Redmon	40.0	0.0	4.0
Geomagnetic Variation Digitization (L56)	–	√	Mabie	60.0	0.0	6.0

As of: 05 Feb 10

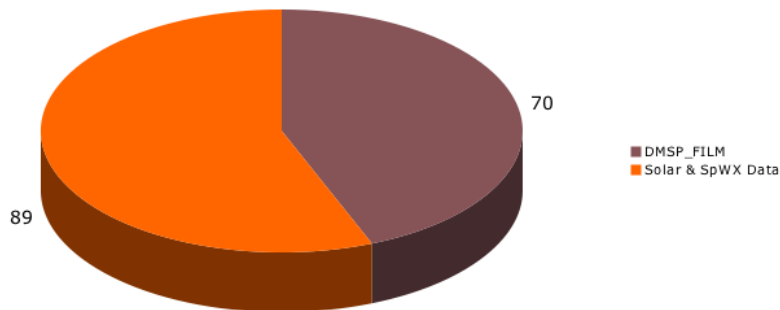


STP Division Overview

Tivoli Mound



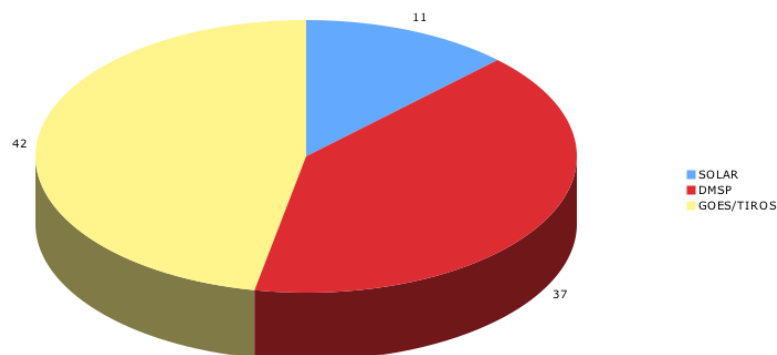
Remaining STP Data in the Tivoli Mound (GB)



4QFY09

Total Size: 159 GB

Remaining STP Data in the Tivoli Mound (GB)



1QFY10

Total Size: 90 GB

	4QFY09	1QFY10
DMSP_Film	70 GB	-
Solar	11 GB	11 GB
DMSP_SWx	37 GB	37 GB
GOES/Tiros	42 GB	42 GB
Total	159 GB	90 GB



STP Division Overview

GOES Spacecraft/Instrument Status



Spacecraft	Series	Operational Status	Status	Magnet1	Magnet2	Magnetometer 1	Magnetometer 2	MAG	XRS	XRS-EUV	EXIS	EPS	HEPAD	SEISS	XRP	SXI	SUVI
GOES 8	GOES I-M	Decommissioned	Red	Green	Green				Green			Green	Green		Green		
GOES 9	GOES I-M	Decommissioned	Red	Green	Green				Green			Green	Green		Green		
GOES 10	GOES I-M	Decommissioned	Red	Green	Green				Green			Yellow	Green		Green		
GOES 11	GOES I-M	Operational West	Green	Green	Green				Green			Green	Green		Red		
GOES 12	GOES I-M	Operational East	Green	Green	Green				Green			Yellow	Green		Red	Red	
GOES 13	GOES N-O-P	Standby	Green			Green	Green			Orange		Green	Green			Orange	
GOES 14	GOES N-O-P	PLT	Green			TBD	TBD			TBD		TBD	TBD			TBD	
GOES P	GOES N-O-P	Launch Ready	TBD			TBD	TBD			TBD		TBD	TBD			TBD	
GOES R	GOES R	Acquisition						TBD			TBD			TBD			TBD
GOES S	GOES R	Acquisition						TBD			TBD			TBD			TBD

As of: 05 Feb 10

Operational (or capable of)	Green
Operational with limitations (or Standby)	Yellow
Operational with Degraded Performance	Orange
Not Operational	Red
Status Unknown	TBD

Notes:

Status Website: <http://www.oso.noaa.gov/goesstatus/>



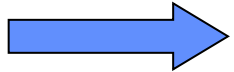


OUTLINE

Solar & Terrestrial Physics Division



STP Program Overview



Milestones & Performance Measures

Awards & Personal Achievements

Accomplishments

Special Interest Items

Issues & Summary



Milestones & Performance Measures

FY10 Milestones



PPBES Program	STP FY10 Milestones (Proposed)	Status	Planned Completion Date	Actual Completion Date	Responsible Person
Space Weather	Provide archive and access for the Space Weather Prediction Center (SWPC) operational D-Region Absorption Prediction (D-RAP) product	C	(Q1) 12/31/2009	(Q1) 12/8/2009	Prendergast
Space Weather	Conduct an Algorithm Requirements Review (ARR) for the Space Environment Monitor on the National Polar-orbiting Operational Environmental Satellite System (NPOESS).	C	(Q1) 12/31/2009	(Q1) 11/17/2009	Manley
Marine Transportation Systems	Develop a satellite-derived global map of economic activity for 2006 using nighttime earth imagery data from the Defense Meteorological Satellite Program (DMSP).	G	(Q2) 3/31/2010		Ghosh
Space Weather	Ingest into the official archives "out of cycle" operational X-Ray Sensor (XRS) data when available for the Geostationary Operational Environmental Satellite number 14 (GOES 14)	G	(Q2) 3/31/2010		Wilkinson
Geodesy	Reconcile the Global Positioning System (GPS) data holdings between the Continuously Operating Reference Stations (CORS) East and CORS West mirror sites.	G	(Q3) 6/30/2010		Coloma
Marine Transportation Systems	Complete version 4 of the Defense Meteorological Satellite Program (DMSP) Operational Linescan System (OLS) annual stable nighttime lights covering the period 1992 to 2009.	G	(Q3) 6/30/2010		Elvidge
Space Weather	Develop a workflow client for the Space Physics Interactive Data Resource (SPIDR) to streamline user delivery of NOAA's space environmental data.	G	(Q3) 6/30/2010		Elespuru
Space Weather	Develop a comprehensive plan for porting Space Weather Prediction Center (SWPC) data holdings to NGDC including maintaining current Frodo access capabilities.	G	(Q4) 9/30/2010		Prendergast
Space Weather	Develop a public interface to the complete Ionosonde data catalog within the NGDC Official Archives.	G	(Q4) 9/30/2010		Redmon
Space Weather	Develop a prototype system for the NOAA Enterprise Archive Access Tool (NEAAT) for the Comprehensive Large Array-data Stewardship System (CLASS).	G	(Q4) 9/30/2010		Kihn
Space Weather	Complete the metadata records using available data for the solar and space environmental sensors on the Geostationary Operational Environmental Satellite (GOES) N-O-P spacecraft	G	(Q4) 9/30/2010		Wilkinson

AOP →

AOP →

AOP →

AOP → AOP milestone



Complete

On-track



Watch Item

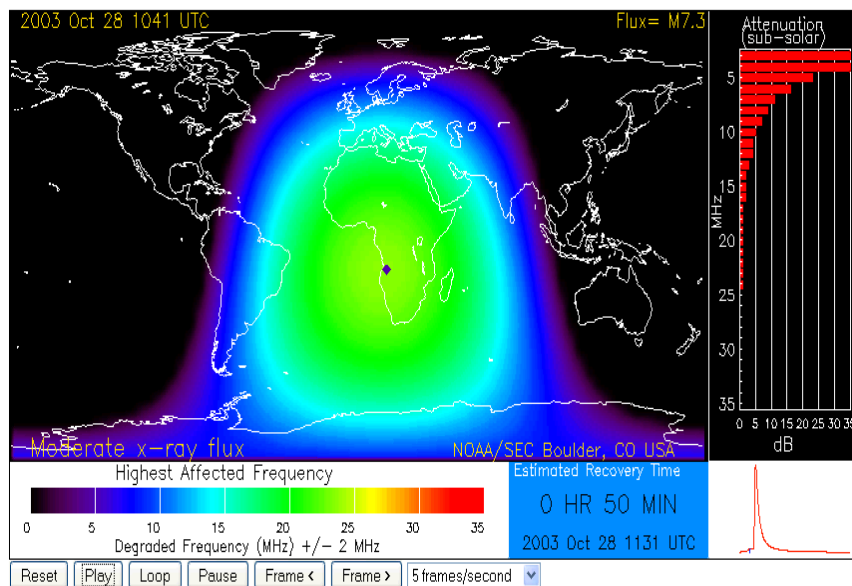
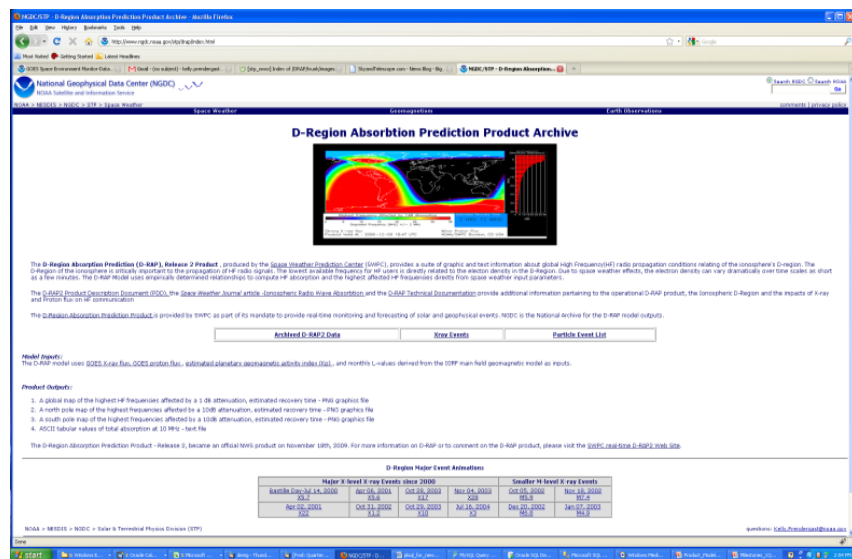
Issue

As of 05 Feb 10



Milestone (Internal)

D-Region Absorption Prediction (D-RAP)



Milestone: Provide archive and access for the Space Weather Prediction Center (SWPC) operational D-Region Absorption Prediction (D-RAP) product.

Background: The SWPC D-RAP product creates global maps of high-frequency (HF) radiowave absorption using space particle data from the GOES satellites. Product features a 1-minute cadence and atmospheric recovery predictions. Archive and access of D-RAP outputs are provided by NGDC in accordance with NAO 212-15¹.

Completion Date:

Planned (FY10-1Q) 31Dec09

Actual (FY10-1Q) 08Dec09

Significance: Primary users include the aviation industry & others that depend on HF communications in remote areas. Availability: <http://www.ngdc.noaa.gov/stp/drap/index.html>

¹Management of Environmental and Geospatial Data and Information



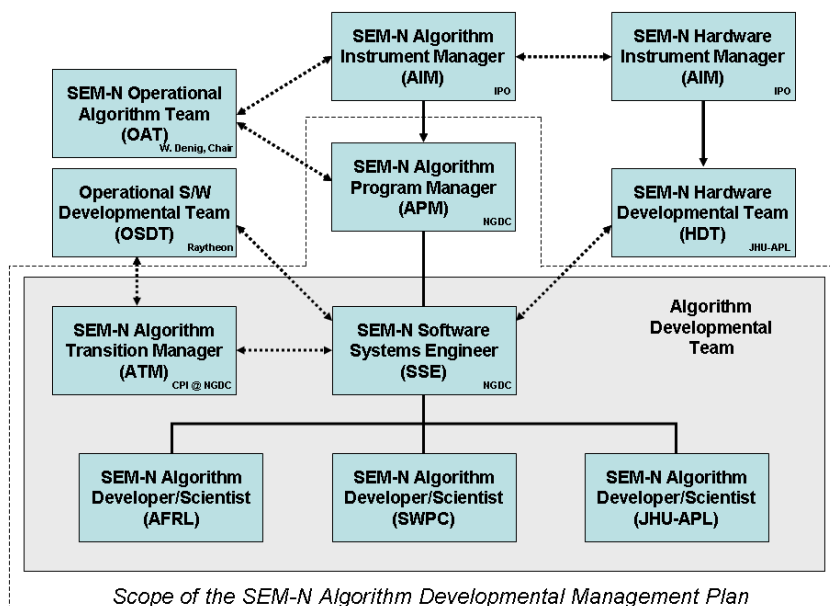
Milestone (Internal)

SEM-N Algorithm Requirements Review



Milestone: Conduct an Algorithm Requirements Review (ARR) for the Space Environment Monitor on the National Polar-orbiting Operational Environmental Satellite System (NPOESS).

Background: The NPOESS SEM-N science-grade algorithms are currently under development through NGDC. SEM-N algorithms are based on heritage approaches from POES, DMSP, and NASA. The development team consists of AFRL, JHU/APL, and the NWS SPWC in addition to NGDC. The review team approved moving forward with the developmental program but requested improvements to the risk management and configuration control plans.



Completion Date:

Planned	(FY10-1Q)	31Dec09
Actual	(FY10-1Q)	17Nov09

Significance: The ARR is the first milestone in the SEM-N algorithm development program.

Key:

AFRL	Air Force Research Laboratory
JHU/APL	Johns Hopkins Univ/Applied Physics Lab
SWPC	Space Weather Prediction Center



Milestones & Performance Measures

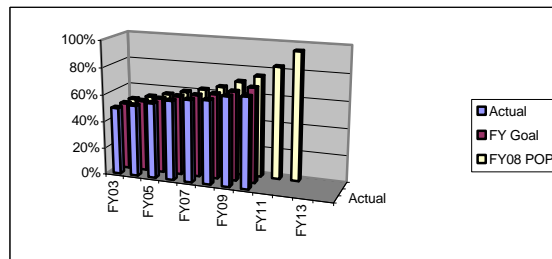
FY10 Performance Measures



Performance Measures

1 - Percentage of archived SWx data available to the public on-line

	Actual	FY Goal	FY08 POP
FY03	50%	50%	50%
FY04	53%	53%	53%
FY05	56%	56%	56%
FY06	59%	59%	59%
FY07	61%	61%	62%
FY08	62%	63%	65%
FY09	66%	66%	70%
FY10	67%	70%	75%
FY11			83%
FY12			95%
FY13			
FY14			

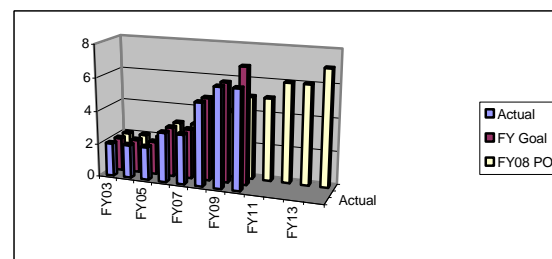


Current Month: *Preliminary*

This Q	Actual	FY10
Planned	This Q/Total	Target
67%	67%	70%

2 - Improved retrospective products for understanding the space environment

	Actual	FY Goal	FY08 POP
FY03	2	2	2
FY04	2	2	2
FY05	2	2	2
FY06	3	3	3
FY07	3	3	3
FY08	5	5	4
FY09	6	6	4
FY10	6	7	5
FY11			5
FY12			6
FY13			6
FY14			7



Current Month: *Preliminary*

This Q	Actual	FY10
Planned	This Q/Total	Target
6	6	7

As of: 02 Feb 10

The FY2008 Program Baseline Assessment (FY08 PBA) was released 08 June 2005.



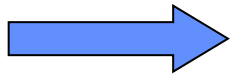
OUTLINE

Solar & Terrestrial Physics Division



STP Program Overview

Milestones & Performance Measures



Awards & Personal Achievements

Accomplishments

Special Interest Items

Issues & Summary



Awards & Personal Achievements

Kudos – HQ USAF/A3O-W



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

OCT 16 2009

HQ USAF/A3O-W
1490 Air Force Pentagon
Washington, DC 20330-1490

Dr. Christopher Fox
Director
National Geophysical Data Center
325 Broadway
Boulder, CO 80305

Dr. Fox

I would like to express my gratitude to Dr. Eric Kihn and his team at the National Geophysical Data Center for their completion of the Space Weather Analysis effort. Their efforts led to the successful creation of the Space Environmental Impact System (SEIS), which has been incorporated into our overarching DoD program for environmental representation, the Environmental Data Cube Support System (EDCSS). SEIS gives us the capability within EDCSS to provide realistic space natural environmental representations to any DoD agency modeling the effects of space on their mission or systems. Simulations will be able to utilize SEIS by identifying historical space weather events that provide the requisite conditions to support the military scenario and simulation objectives, in the format required by the simulation. SEIS merges space weather data archives with impacts rules to create an effects matrix that is accessed by simulations that replicate space-based systems and performance--a key to understanding how space weather impacts the warfighter.

This development effort highlights not only the key partnership between the DoD Air & Space Natural Environment Modeling & Simulation Executive Agent and NGDC, but also between Air Force Weather and NOAA in the area of space weather, and reflects the best use of civil and military resources to support the nation. Again, thanks to Dr. Kihn and his team for delivering a top-notch product.

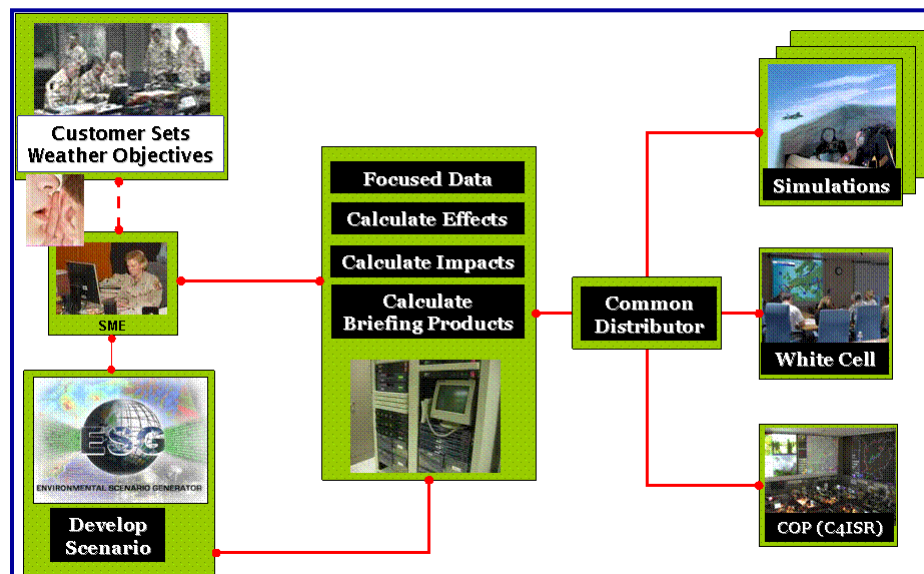
THANKS!

VIR

FRED P. LEWIS, SES, PhD, USAF
Director of Weather
Directorate of Operations
DCS, Operations, Plans & Requirements

Dr. Fred Lewis (AFW) expressed his thanks to Eric Kihn & team for supporting the USAF M&S effort by creating the **Space Environmental Impact System (SEIS)** as a part of the SWx Analysis effort.

Dr. Lewis: “SEIS gives us the capability within EDCSS to provide realistic space natural environmental representations to any DoD agency modeling the effects of space on their mission or system.”





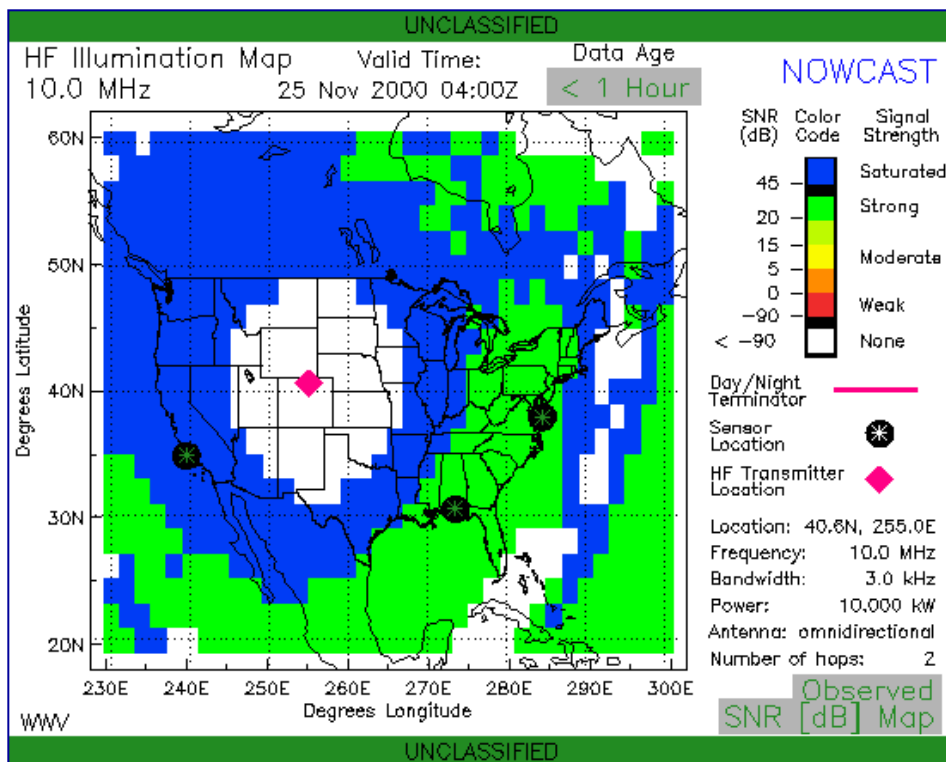
Awards & Personal Achievements

Thanks from John Q. Public



First let me say that I really appreciate your comment about responding to the public. In my 30 some years as a federal financial manager, I always went out of my way to make sure questions from the public (or any other external entity) were handled promptly and fully. In part it was to counter the low level whine of those who characterized the feds as (fill in the phrase) less than helpful, but also because that's what I thought public service meant. I'm glad to find others share this perspective.

Mr. Paul Voorhees



Terry Bullett – “I invented an **HF Illumination Map** product that would take real-time data from instruments, make a model of the ionosphere, and then make a detailed prediction of where HF energy from a given transmitter would land back on Earth. It shows multiple skip zones, zone focusing, R2 loss, atmospheric noise impacts, etc.



OUTLINE

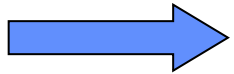
Solar & Terrestrial Physics Division



STP Program Overview

Milestones & Performance Measures

Awards & Personal Achievements



Accomplishments

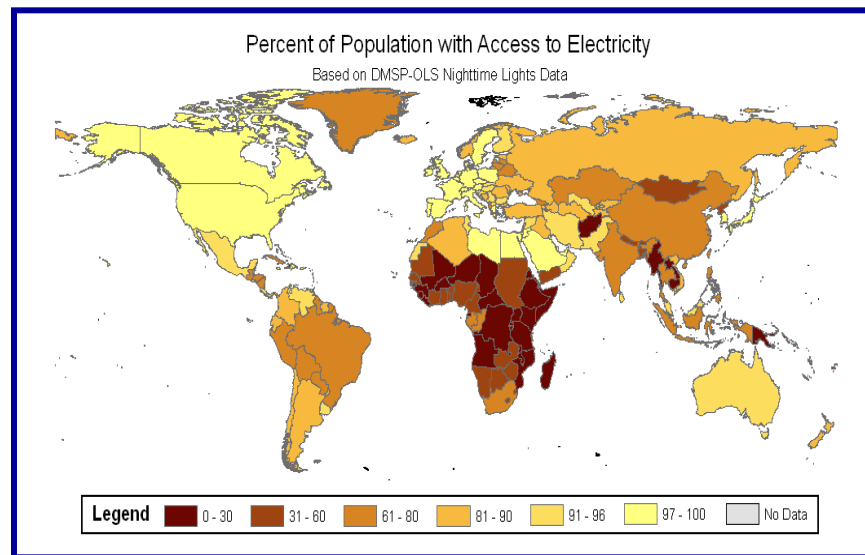
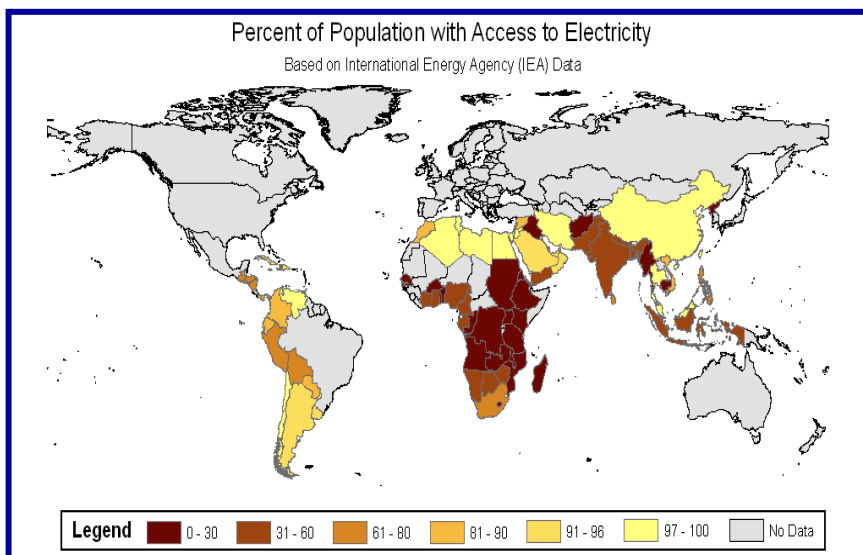
Special Interest Items

Issues & Summary

Accomplishment

Who's In The Dark

Nighttime lights imagery data were used to create a global map of the percent of population having access to electricity (lower right). These data can be compared to a similar map prepared by the International Energy Agency (lower left). Data from the DMSP Optical Linescan System (OLS) provides a much more comprehensive view of “Who’s in the Dark”.



International
Energy Agency

- Energy security
- Environmental protection
- Economic growth
- Engagement worldwide

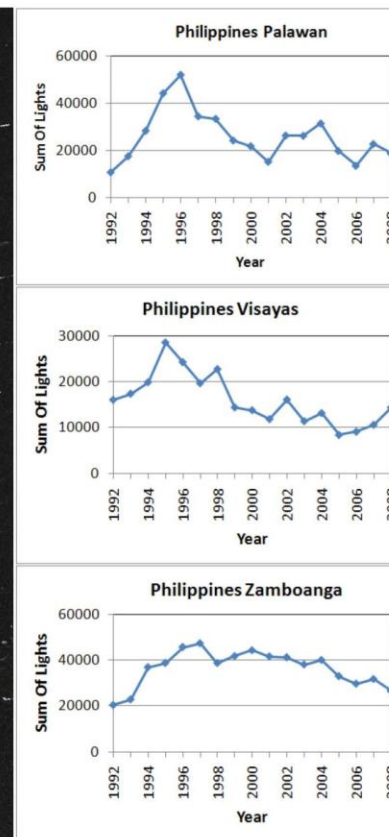
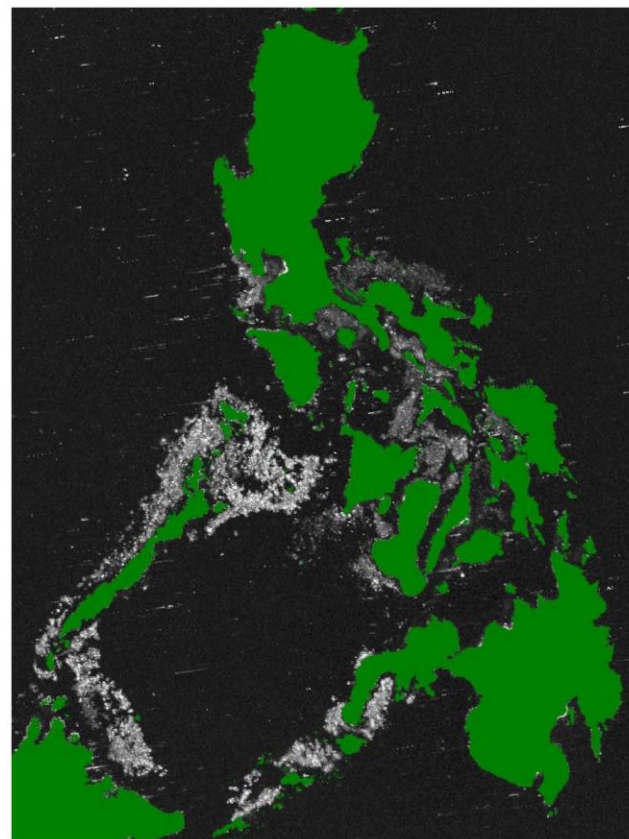
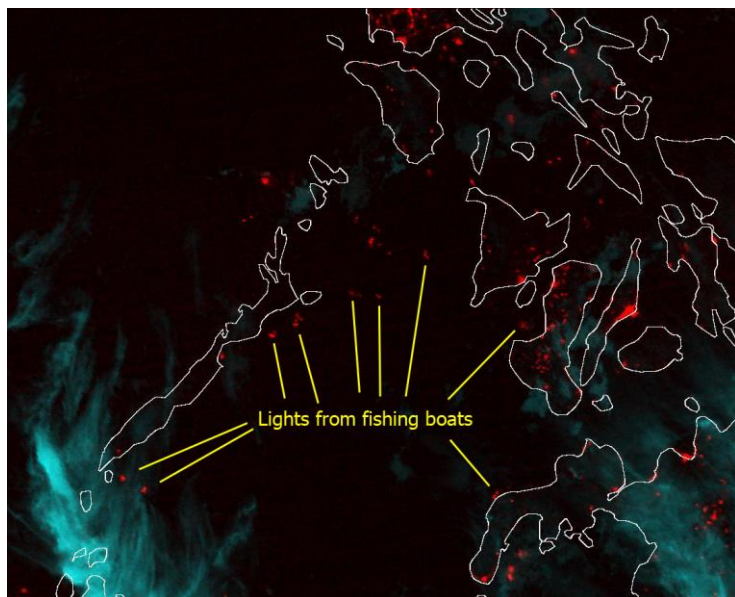


Accomplishment

Coral Triangle Initiative – Fishing Boats



The Coral Triangle Initiative is an international program to preserve and restore coral reefs, fisheries and marine resources in the Coral Triangle Region (CTR), one of the world's biodiversity treasures. NGDC has an on-going program to use nighttime lights imagery to measure long-term trends and monitor real-time fishing activity within the CTR.



Long-term trends in CTR fishing (1992 – present)

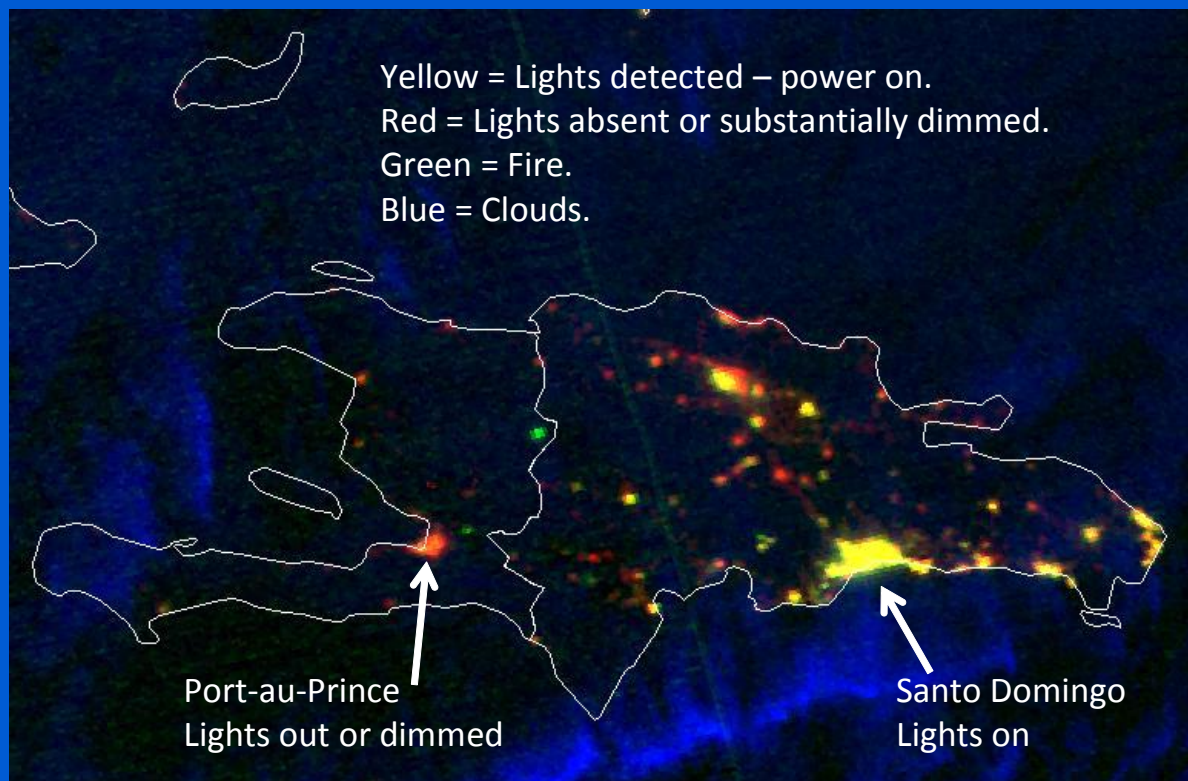
Real-time monitoring of fishing activity – 05Jan10

http://www.ngdc.noaa.gov/dmsp/download_cti.html

Accomplishment

Lights Out in Haiti – 12 Jan 2010

DMSP Power Outage Detection in Haiti



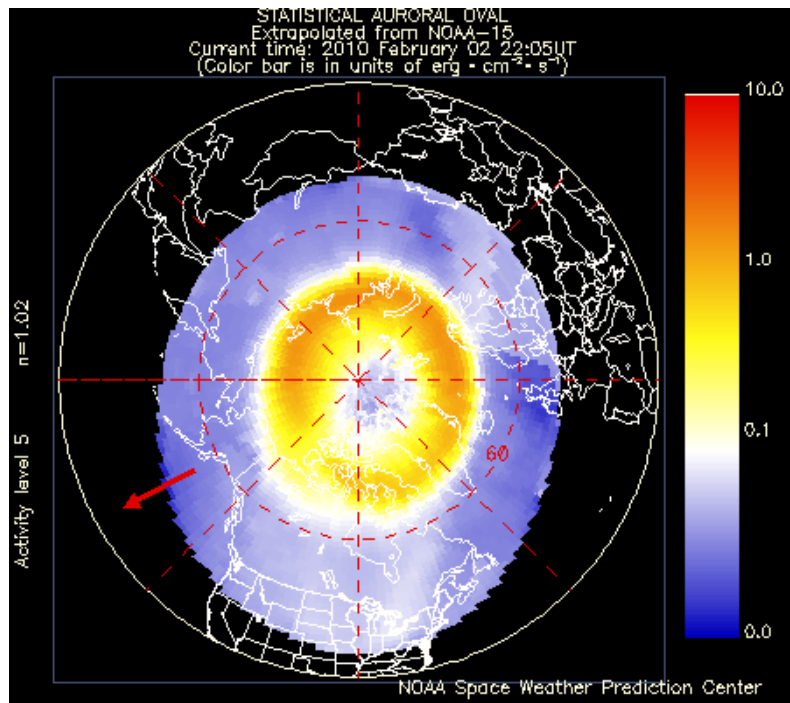
Processing by the NOAA-NESDIS Earth Observation Group at the National Geophysical Data Center
chris.elvidge@noaa.gov, Tel. 1-303-497-6121

Note: Haiti was struck by a magnitude 7.0 earthquake on January 12, 2010 at 4:53 pm EST.
STP PMR – 08 Feb 2010

Accomplishment

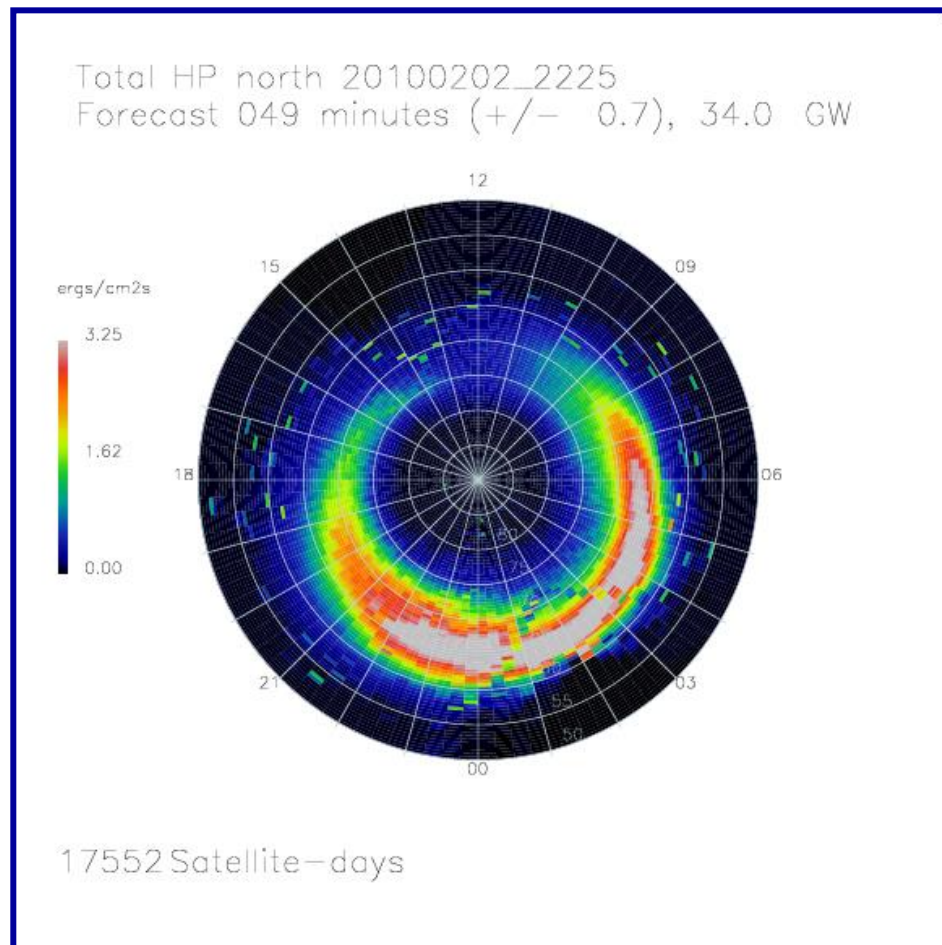
New Auroral Oval Product for SWPC

Rob Redmon is working with Janet Green (SWPC) to provide a forecast replacement for the popular POES Auroral Maps. The new forecast product uses ACE solar wind data to provide an approximate 45-minute forecast of impending solar storms.



Current POES Auroral Map

STP PMR – 08 Feb 2010



Newell Particle Precipitation Model

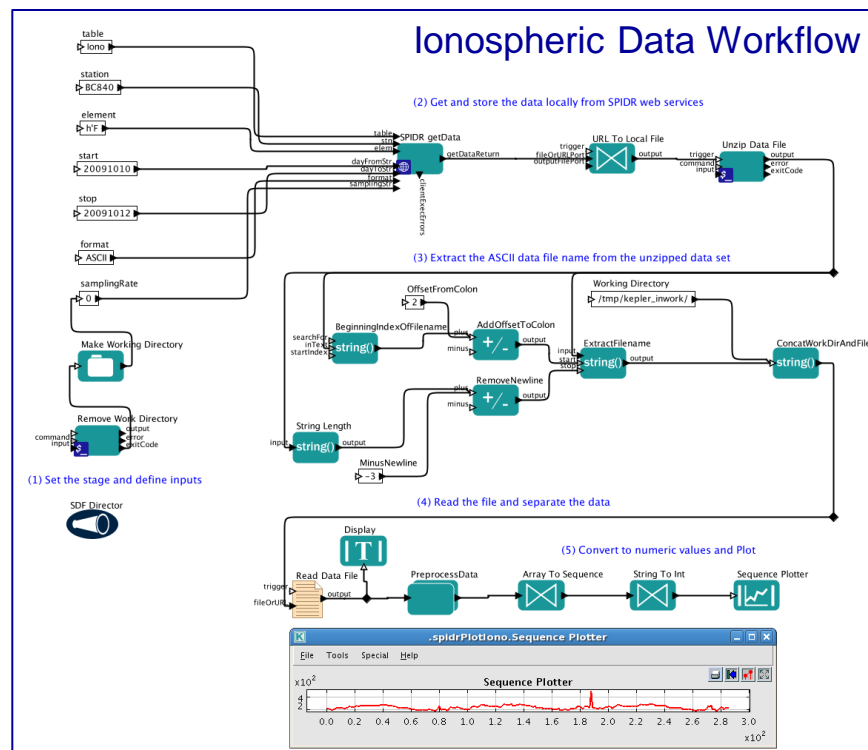
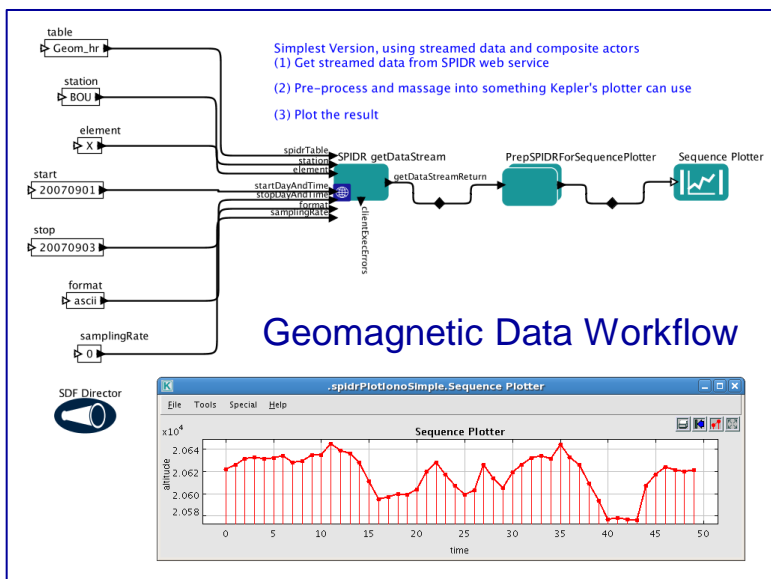
Website: http://ngdc.noaa.gov/stp/ovation_prime/

Movie: [20100120 North Forecast.mov](#)

Accomplishment

Kepler Workflow Engine – SPIDR

Kepler workflows are being developed to facilitate and standardize access to space weather data available through the Space Physics Interactive Data Resource (SPIDR) network and other similar data-access portals. The goal of the Kepler project is to help scientists and other users create, execute and share models and analyses across a broad range of scientific and engineering disciplines. Kepler's graphical user interface allows users to simply select and then connect pertinent analytical components and data sources to create a "scientific workflow". Peter Elespuru has developed Kepler workflow web service clients for SPIDR ionospheric and geomagnetic data access.



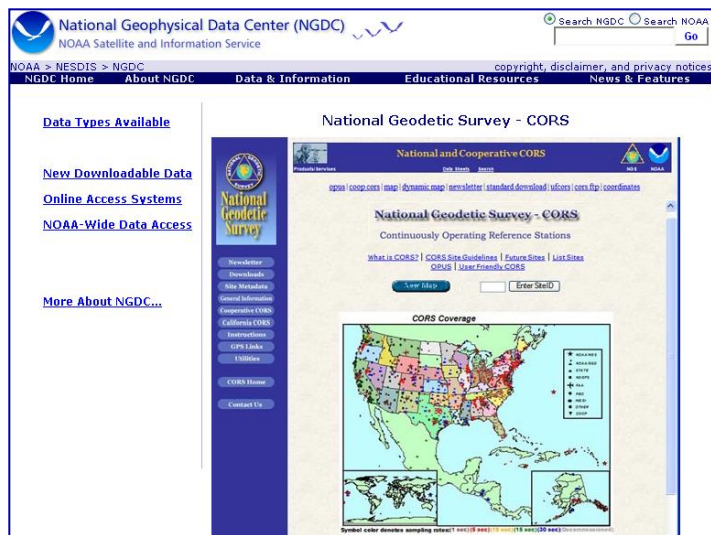


Accomplishment CORS in CLASS

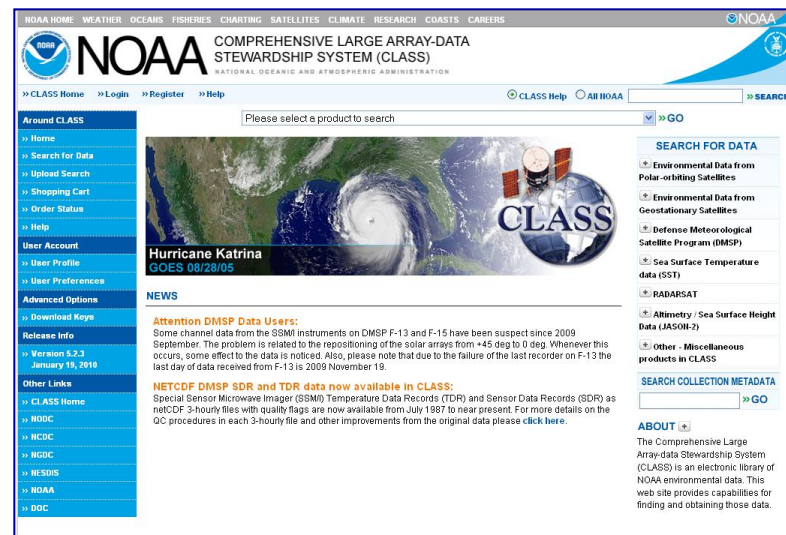


The CORS dataset will likely be NGDC's first data submission to NOAA's CLASS archive infrastructure. **Fran Coloma** has briefed the CLASS Operations Working Group (COWG) and CLASS management team on the CORS data holdings. She is currently working with the CLASS Requirements Team to refine the archive and access requirements for CORS.

NGDC is the designated archive for NGS GPS (now GNSS) data (i.e. CORS) according to NOS Records Disposition Schedule 1602-12. Therefore CORS data should be stewarded by NGDC. Yearly CORS data volume is 4 TB/yr for RINEX data plus 0.8 TB/yr for binary data. As of Jan 2010, total historical CORS data amounts to ~15 TB.



Continuously Operating Reference
Stations (CORS)

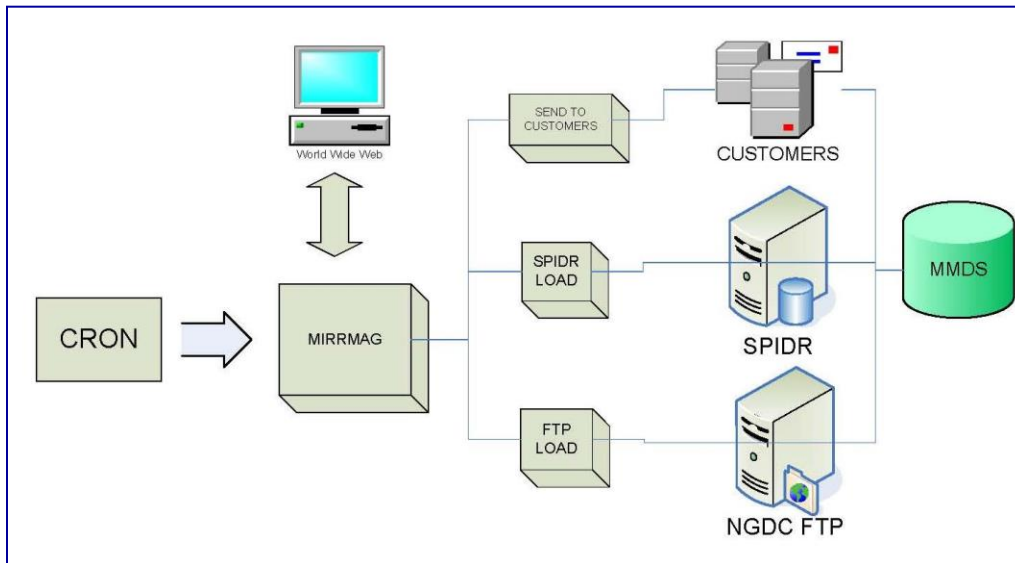


Comprehensive Large Array-data
Stewardship System (CLASS)

Accomplishment

Geomagnetic Archive Status

The flowchart below illustrates the Magnetometer Mirror Ingest System (MIRRMAG) ingest system which is based on the organizational structure of MIRRION. The automatic data ingest process is stepwise similar to previous manual operations. MIRRMAG manages the data ingest from start to finish for well formatted data sets that can be obtained online. Currently, it is setup to handle Intermagnet and Non-Intermaget definitive data, and Intermagnet preliminary data (used internally only).



***“Take off your
blindfolds and
open your eyes”***

Clean House



Justin Mabie has been working with a student hire to sort through the piles of accumulated geomagnetic data. The geomag data are being inventoried within the Magnetometer Mirror Ingest System (MMDS) database and compared to the Edinburgh and Kyoto WDC holdings.



OUTLINE

Solar & Terrestrial Physics Division

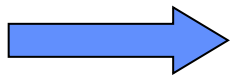


STP Program Overview

Milestones & Performance Measures

Awards & Personal Achievements

Accomplishments



Special Interest Items

Issues & Summary

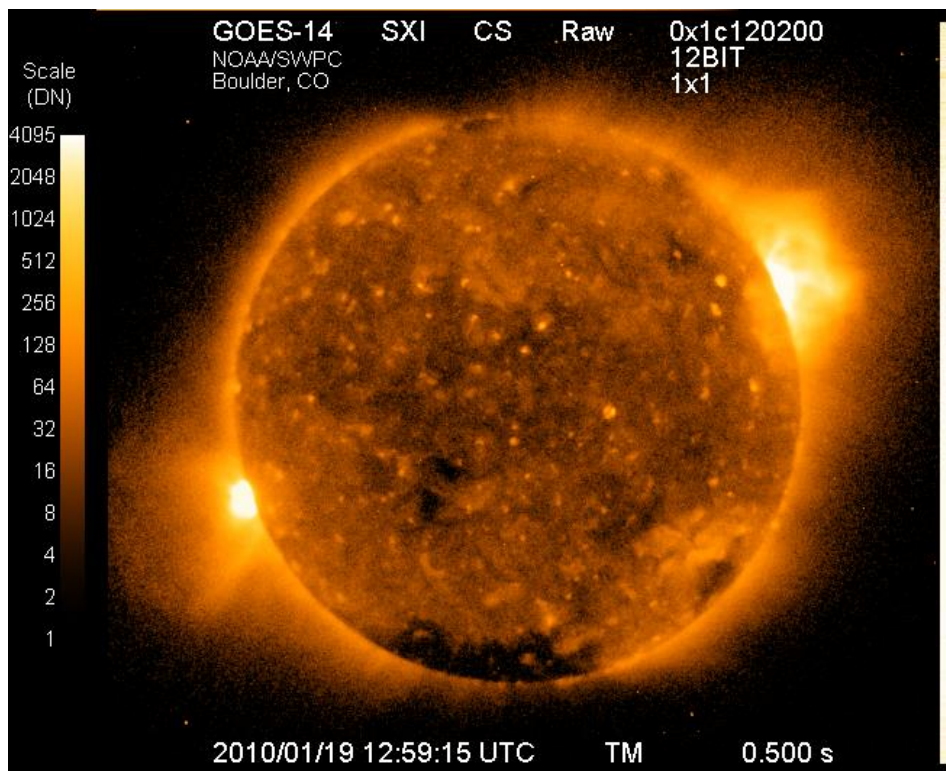


Special Interest Item

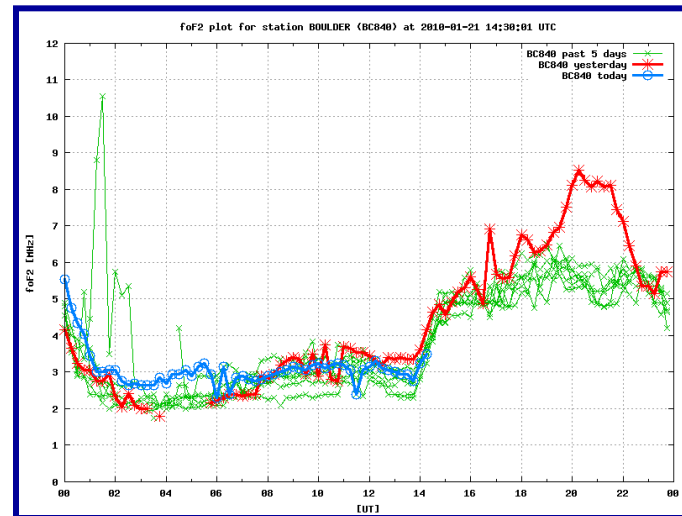
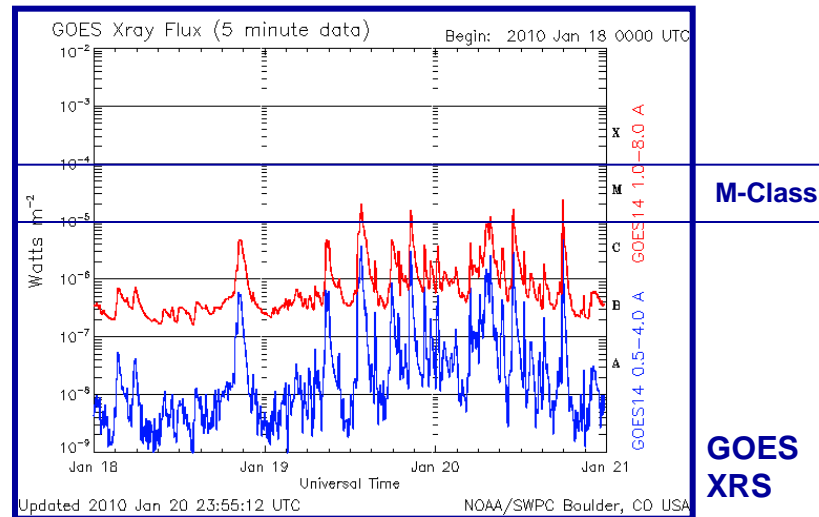
Here Comes the Sun



On January 19th the first M-class solar flare for cycle 24 erupted from the surface of the sun. The last M-class flare for cycle 23 occurred on March 25, 2008.



GOES-14 Solar X-ray Imager



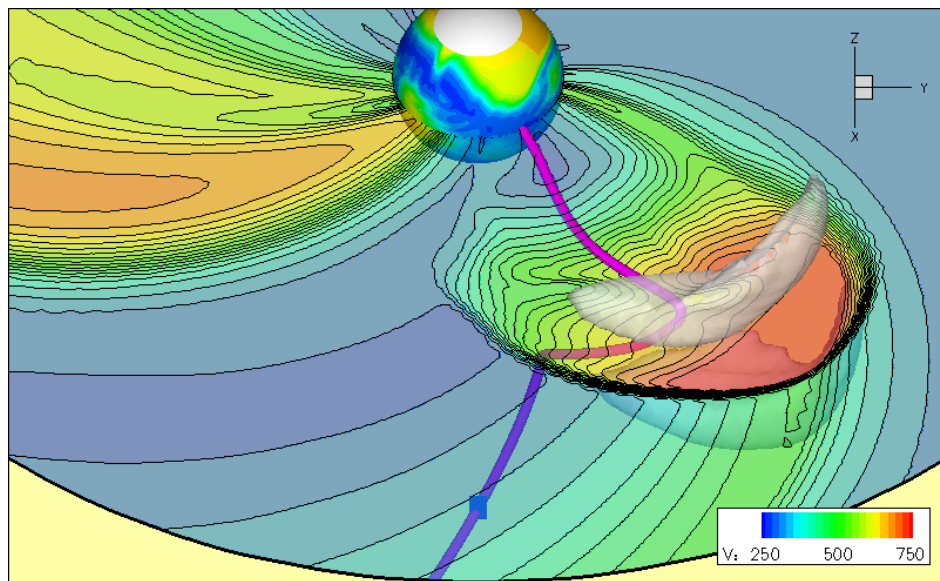
Boulder Ionosonde – Daily plots of F_oF_2



Special Interest Item

ENLIL in CLASS?

Enlil is the first in line of physics-based, space weather models to be brought into full NWS operations within SWPC (11/2011). Enlil is a comprehensive, 3D, time-dependent, computer model of the inner heliosphere (solar wind) which can provide a 1-to-4 day advanced warning of oncoming Coronal Mass Ejections (CMEs) and Corotating Interactions Regions (CIRs).



Enlil - Sumerian God of the wind

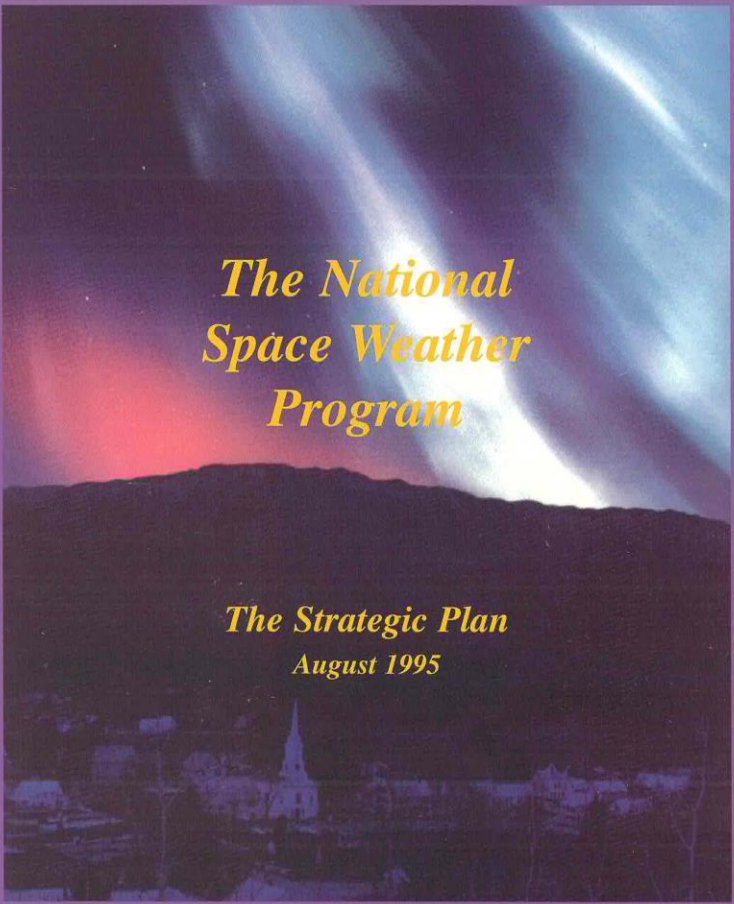
The Enlil model will be run operationally at the Environmental Modeling Center (EMC). SWPC requests that NGDC provide steward the model data in accordance with NOAA directives (NAO 212-15). Daily data volume is ~128 GB/day (~40 TB/year).

Question: Can the Enlil model output be archived directly into CLASS from the EMC?



Special Interest Item

A New Space Weather Strategic Plan



The National Space Weather Program

*The Strategic Plan
August 1995*

Office of the Federal Coordinator for Meteorology

The OFCM/CSESMO “Summary Report on NPOESS Space Environmental Sensor Mitigation Options and Recommendations” was submitted to the Office of Science & Technology Policy (OSTP) on 30 Oct 09. NGDC/STP was a key participant in the NSESMO activity during most of FY09. Having completed this report the OFCM Committee for Space Weather (CSW) has now turned its attention to developing a new **Strategic Plan for the National Space Weather Program**. The original strategic plan was published in 1995. NGDC/STP is assisting in the development of this new plan and will be a signature to the final document.



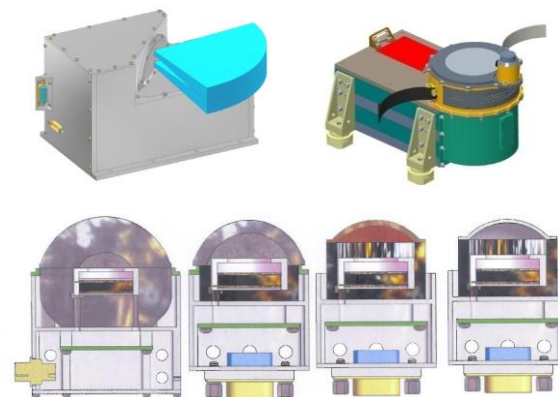
Special Interest Item

NPOESS Status – SEM-N



On 01 Feb the President announced the termination of the National Polar Orbiting Operational Satellite System (NPOESS) and the dissolution of the Integrated Program Office (IPO). NOAA and the USAF will now go their separate ways in fielding separate polar-orbiting satellite systems to replace POES and DMSP. NOAA will take over responsibility for the mid-afternoon (1430 LTAN) orbit whereas the USAF will be responsible for the morning (1730 LTAN) orbit. MetOp at 0930 LTAN is unaffected. A transition team is being formed to determine the way forward.

The **Space Environment Monitor for NPOESS** (SEM-N) was planned for NPOESS C1 & C3 @1430 LTAN. The JHU Applied Physics Laboratory is the hardware developer for SEM-N and NGDC is responsible for algorithm development. The status of SEM-N is currently unknown. In the meantime the program office has directed the algorithm team to continue their activities as planned.



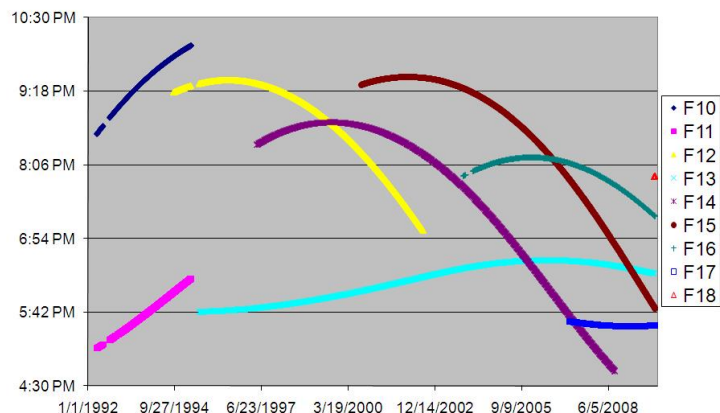


Special Interest Item

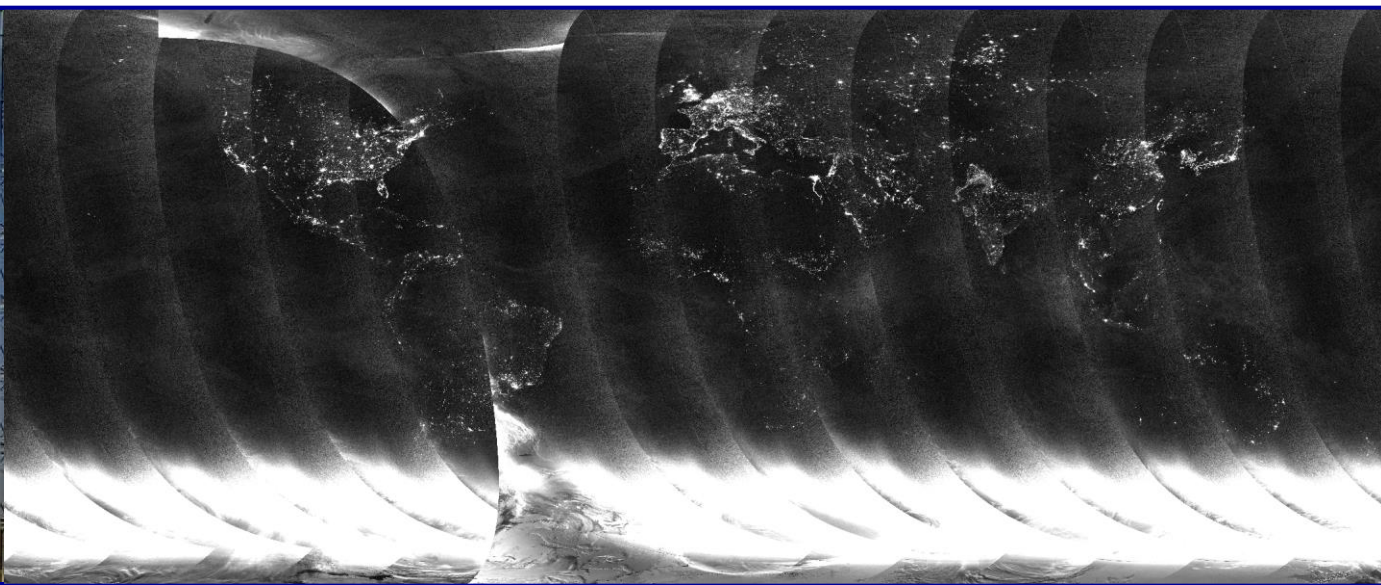
DMSP F18 Nighttime Lights



DMSP Local Times at the Ascending Equatorial Crossing



The Defense Meteorological Satellite Program (DMSP) spacecraft F18 was successfully launched from Vandenberg AFB on 18 Oct 2009. NGDC uses DMSP earth imagery data to create near real-time nighttime lights products for the DoD and other USG departments. F18 revives the ability to collect global nighttime lights after F16 (solar contamination) and F15 (orbital degradation).



F18 OLS Visible Band Mosaic for 2009/11/19



Special Interest Item

NGS Aerial Photographs – CDMP



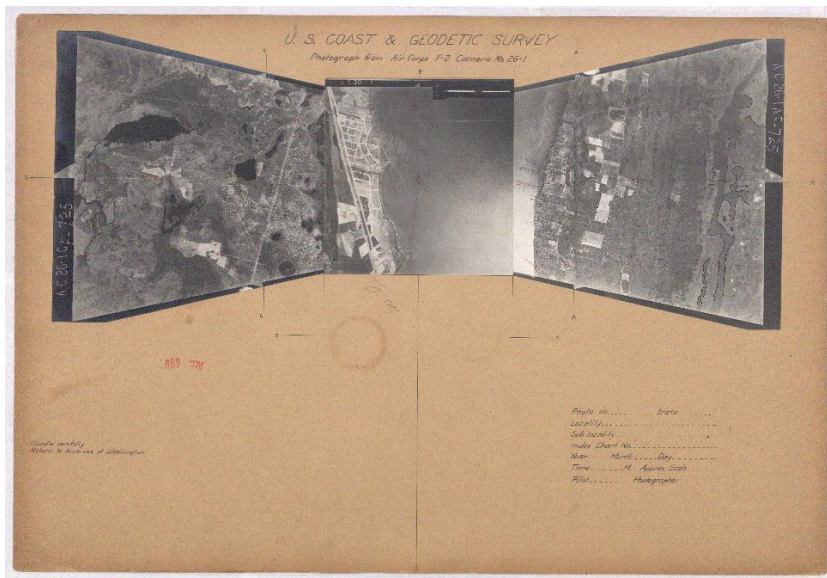
FLORIDATODAY.com

Long-lost Aerials of Old Brevard County

26 January 2010 Rick Neale

Link: [Florida Today. Com](http://FloridaToday.Com)

- **Hidden inside a Colorado mountain**, the Brevard County aerial photographs remained lost until a local historian prodded officials into tracking them down . . .
- But in 1993, the National Oceanic Atmospheric Administration [sic] transferred the aerial photos to a National Archive storage facility in Boulder, Colo . . .
- Finally, a **government employee found the photographs** in August 2009 . . .
- A contractor scanned the digital copies of the photographs . . .



Brevard County, Florida



Raiders of the Lost Ark



Special Interest Item

New CORS Sites Added - Haiti Support



On January 15 the NOS National Geodetic Survey incorporated four new CORS sites in support of recovery efforts in Haiti following the 12 January earthquake.

New CORS sites:

SAN0 – San Andres Island

SCUB – Santiago de Cuba

GTK0 – Grand Turk Island

MOPR – Mona Island, PR



Data are used for high-accuracy geopositioning of the vital services infrastructure (utilities). Historical data since July 19, 2009 (backfilled) are included within the NGDC archives.



OUTLINE

Solar & Terrestrial Physics Division



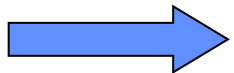
STP Program Overview

Milestones & Performance Measures

Awards & Personal Achievements

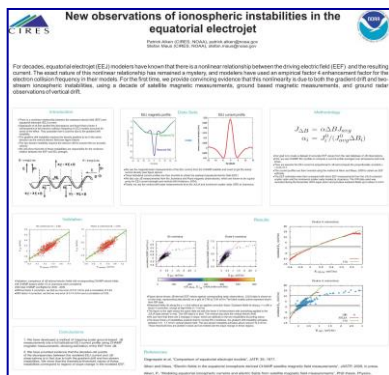
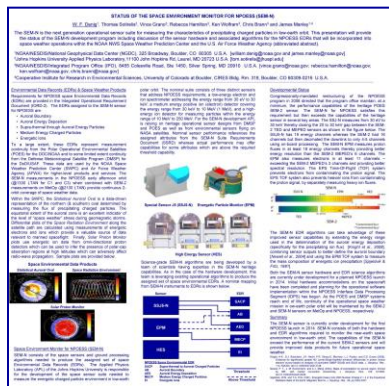
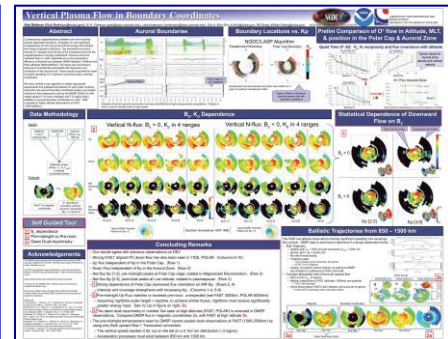
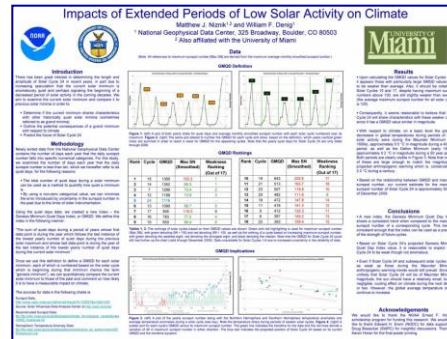
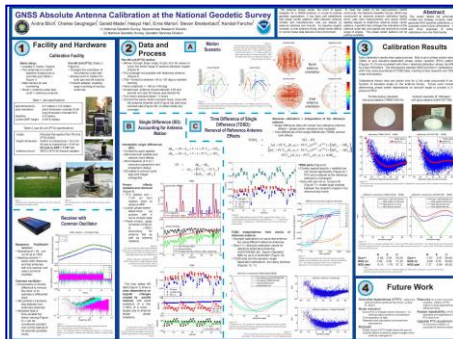
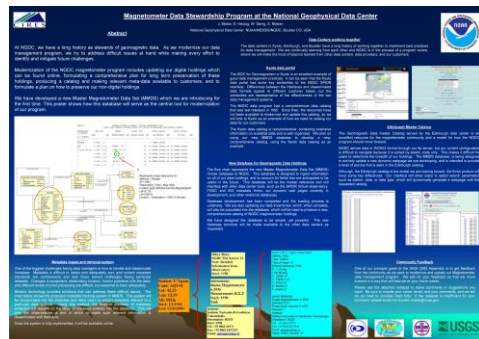
Accomplishments

Special Interest Items



Issues & Summary

Issues & Summary Hall Posters





Issues & Summary

STP Publications – FY10 YTD (11)



- Alken, P.** and S. Maus (2010), The Relationship Between the Ionospheric Eastward Electric Field and the Equatorial Electrojet, *submitted to Geophys Res. Lett.*
- Buaba, R., **E. Kihn**, M. Gebril, A. Homaifar, and M. Zhizhin (2009), Locality Sensitive Hashing For Satellite Images Using Texture Feature Vectors, IEEE Aerospace Conference Proceedings, Nov 2009.
- Elvidge, C.D., K.E. Baugh**, P.C. Sutton, B. Bhaduri, **B.T. Tuttle**, **T. Ghosh**, **D. Ziskin** and **E.H. Erwin** (2010), Who's In The Dark: Satellite Based Estimates Of Electrification Rates, *Urban Remote Sensing: Monitoring, Synthesis and Modeling in the Urban Environment*, ed. X. Yang, Wiley-Blackwell, Chichester, UK, *In Press*.
- Elvidge, C.D., K. Baugh, B. Tuttle, D. Ziskin** and **T. Ghosh** (2009), "Satellite Observation of Heavily Lit Fishing Boat Activity in the Coral Triangle Region", Proc. 30th Asian Conference on Remote Sensing, 18-23 Oct 2009, Beijing, China.
- Gebril, M., **E. Kihn**, R. Buaba, A. Homaifar, and M. Zhizhin (2009), Structural Indexing of Satellite Images using Texture Feature Extraction for Retrieval, IEEE Aerospace Conference Proceedings, Nov 2009.
- Ghosh, T.**, R.L. Powell, S. Anderson, P.C. Sutton and **C.D. Elvidge** (2010), "Informal Economy And Remittance Estimates of India Using Nighttime Imagery", *International Journal of Ecological Economics & Statistics*, 17, pp. 16-50.
- Matsumura, K., R.J. Hijmans, Y. Chemin, **C.D. Elvidge**, K. Sugimoto, W.B. Wu, Y.W. Lee and R. Shibasaki (2009), Mapping the Global Supply and Demand Structure of Rice, *Sustainability Science*, 4, pp. 301-313, doi: 10.1007/s11625-009-0077-1.
- Nghiem, S.V., D. Balk, E. Rodriguez, G. Neumann, A. Sorichetta, C. Small and **C.D. Elvidge** (2009), "Observations of Urban and Suburban Environments with Global Satellite Scatterometer Data", *ISPRS Journal of Photogrammetry and Remote Sensing*, 64, pp. 367-380.
- Soloviev, A. A., Sh. R. Bogoutdinov, S. M. Agayan, A. D. Gvishiani, and **E. Kihn** (2009), Detection of Hardware Failures at INTERMAGNET Observatories: Application of Artificial Intelligence Techniques to Geomagnetic Records Study, *Russ. J. Earth Sci.*, 11, ES2006, doi:10.2205/2009ES000387.
- Sutton, P. C., A. Goetz, S. Fildes, C. Forster and **T. Ghosh** (2009), Darkness on the Edge of Town: Mapping Urban and Peri-urban Australia Using Nighttime Satellite Imagery, *The Professional Geographer*, 62, pp. 119-133.
- Sutton, P. C., S.A. Anderson, **C.D. Elvidge**, **B.T. Tuttle** and **T. Ghosh** (2009), Paving the Planet: Impervious Surface as Proxy Measure of the Human Ecological Footprint, *Progress in Physical Geography*, 33, pp. 510-527, doi: 10.1177/0309133309346649.



Issues & Summary

STP Presentations – FY10 YTD (14)



30th Asian Conference on Remote Sensing, 18-23 October 2009, Beijing, China

- Remote Sensing in the Cause of a Sustainable Society (Keynote), **C.E. Elvidge**.
- Satellite Observation of Heavily Lit Fishing Boat Activity in the Coral Triangle Region (Oral), **C.E. Elvidge, K. Baugh, B. Tuttle, D. Ziskin and T. Ghosh**.

3rd Annual RASEI Research Symposium, 21 October 2009, Boulder, CO

- Lighting the Sky (Poster), **D. Ziskin, C. Elvidge, K. Baugh, B. Tuttle, T. Ghosh and E Erwin**.

AGU Fall Meeting, 14-18 December 2009, San Francisco, CA

- An Absence of Equatorial Scintillation Activity Prior to Large Geomagnetic Storms (Oral), SA13B-07, D.N. Anderson and **R.J. Redmon**.
- GNSS Absolute Antenna Calibration at the National Geodetic Survey (Poster), G11B-0645, **A.L. Bilich** and G.L. Mader.
- The Impact of the Virtual Observatories on Space Weather Science, Modeling, and Predictions (Invited), SH54A-04, J.C. Green, R.S. Weigel, **E.A. Kihn** and D. Baker.
- The Intercalibration of the Night Lights Dataset (Poster), IN43B-1157, **D.C. Ziskin, C. Elvidge, K. Baugh, B. Tuttle and T. Ghosh**.
- Ionosphere Scientific Data Stewardship at NGDC (Poster), SA43A-1607, **T.W. Bullett, R.J. Redmon, J. Manley, R. Conkright, E.A. Kihn, K. Prendergast, P. Elespuru, K. Horan, J. Schminky and W.F. Denig**.
- New Observations of Ionospheric Instabilities in the Equatorial Electrojet (Poster), SA23B-1481, **P. Alken** and S. Maus.
- The NOAA Archives of the 21st Century (Oral), IN44A-05, K.S. Casey, J. Relph, **E. Kihn**, J.J. Bates, L. McCulloch, K.R. McDonald and R. Vizbulis.
- A Prototype User Interface for Space and Solar Data - What will be relevant in 2015? (Poster), IN41A-1099, **D.C. Wilkinson**
- The Space Environmental Impact System (Oral), IN34A-04, **E.A. Kihn**.
- Tidal Signatures in Thermospheric and Ionospheric Quantities (Invited), SA41B-04, H. Luhr, M. Rother, B.G. Fejer, K. Haeusler and **P. Alken**.
- Vertical Plasma Flow in Auroral Boundary Coordinates for 1997 (Poster), SM41A-1681, **R.J. Redmon**, W.K. Peterson, L. Andersson, **E.A. Kihn** and **W.F. Denig**.

90th AMS Annual Meeting, 17-21 January 2010, Atlanta, GA

- Impacts of Extended Periods of Low Solar Activity on Climate (Poster), Seventh Symposium on Space Weather, **M.J. Niznik** and **W.F. Denig**.
- Status of the Space Environment Monitor for NPOESS (SEM-N) (Poster), 6th Annual Symposium on Future National Operational Environmental Satellite Systems-NPOESS and GOES-R, **W.F. Denig**, T. Sotirelis, V. Grano, R. Hamilton, K. Wolfram, C. Brann and **J. Manley**.



Issues & Summary

Solar & Terrestrial Physics Division



- **Satellite processing transition from SWPC (4QFY04) – active**
- **Continuity of solar data services (1QFY09) – active**
- ✓ *Refocus of NWS/SWPC Objectives (2QFY08) – NLAI*
- **NightSat Mission Concept (1QFY08) – active**
- ✓ *NGS Aerial Photography (1QFY08) – NLAI*
- **DMSP Data in CLASS (1QFY08) – active**
- ✓ *Migrate the DMSP OLS Archive to CLASS (2QFY07) – O.B.E.*
- ✓ *ADIC-API Needed (1QFY07) – NLAI*

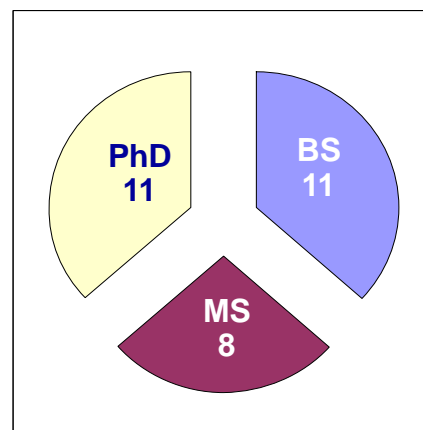
Metrics (YTD)

Papers published: 11

Papers presented: 16

Professional Societies: 17

**STP
Highest
Degrees**





QUESTIONS?